1.26 Single Frequency Fiber Laser, Phase I

Completed Technology Project (2009 - 2009)

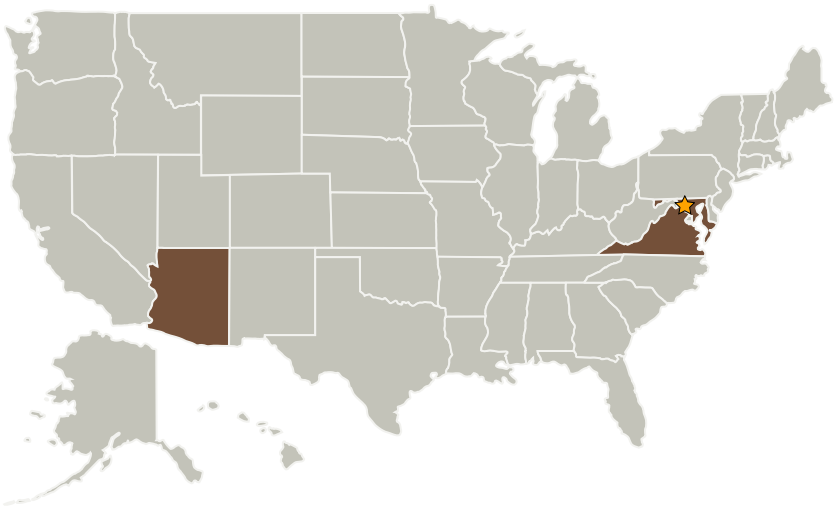
Project Introduction

This proposal is for the development of an innovative compact, high power, and extremely reliable 1.26 micron Ho-doped single frequency fiber laser. The proposed single frequency fiber laser consists of Raman pump laser and single frequency 1.26-micron fiber laser, which will be constructed by using Ho3+-doped fluoride glass fiber. A Raman fiber laser is used as a resonant pump laser source for Ho3+-doped fiber laser. High gain per unit length can be achieved in Ho3+-doped fluoride glass fiber due to the strong resonant pump. This type of fiber based seed laser is needed for remote sensing of O and O -N for measuring atmospheric pressure. The single frequency 1.26-micron fiber laser with high-speed frequency modulation capability and electronic control, which will be developed in Phase II as part of the seed laser, can be used to build coherent laser radar to perform instant measurement.

Anticipated Benefits

There are several potential non-NASA commercial applications. The 1.26 micron seed laser can be used for commercial coherent LIDAR, remote sensing for environment monitor, and non-linear frequency conversion.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
NP Photonics, Inc.	Supporting Organization	Industry	Tucson, Arizona

Primary U.S. Work Locations	
Arizona	Maryland
Virginia	

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Narasimha S Prasad

Principal Investigators:

Richard F Myers
Jianfeng Wu

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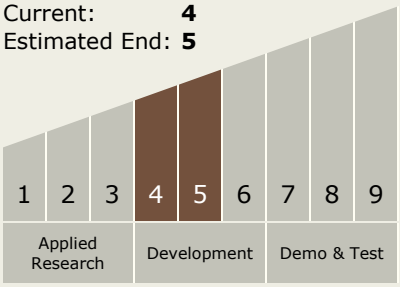
Technology Maturity (TRL)

Start: **4**
Current: **4**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers